REMARKS

This Amendment is submitted in response to the Final Office Action dated February 8, 2005, having a shortened statutory period set to expire May 8, 2005, extended August 8, 2005 herein. Claims 1-22, 24-41 and 44-78 are pending in the present application. Applicants have amended Claims 15, 22 and 24-25. No new matter has been entered by these amendments.

Claim Rejections under 35 U.S.C. §102

In Section 6 of the present Office Action, Claims 59-61 have been rejected under 35 U.S.C. §102(b) as being anticipated by *Williams et al.* (U.S. Patent No. 5,808,767). That rejection is respectfully traversed and reconsideration of the claims is requested.

Independent Claim 59 in the present application has been amended to include the recitation that "*each optical transceiver exclusively assigned to a subscriber destination to allocate unshared bandwidth to its assigned subscriber destination.*" While the present Office Action argues on pages 3-4 that Williams discloses such a system of optical transceivers, the Examiner merely admits that each transceiver operates on a distinct wavelength and that wavelengths are dynamically assigned to subscriber destinations (see page 3 of the present Office Action). Applicants pointed out in our previous response that the present invention was claiming the assignment of each optical transceiver to a subscriber destination, not merely assigning the unshared bandwidth to either the transceiver or the destination. In the Examiner's response to arguments on page 50 of the present Office Action, this distinction does not appear to have been recognized. Therein, the Examiner repeats the theory that Williams teaches dynamically assigning bandwidth by "assigned wavelength and time slot" without a single mention of optical transceivers.

Applicants again submit that Williams fails to show or suggest a plurality of optical transceivers wherein "*each optical transceiver assigned to a subscriber destination.*" On page 3 of the present Office Action, it is argued that *Williams* teaches this element of the present invention by the disclosed elements of a transmitter array 401 and receiver 403 in Figure 4, and further by the descriptions at col. 10, lines 18-33 and col. 8, lines 24-31. In one teaching (col. 10), *Williams* is teaching assigning fixed wavelengths to each of the transmitters 401, and in

another teaching (col. 8), describing that the media access controller 105 has the capability to allocate bandwidth, wavelengths or bit rate connections. *Williams* does not suggest there is a connection between carrier wavelengths set in each of the integrated circuits 401 and bandwidth allocated by MAC 105. The transceivers 401 merely provide the carrier for the allocated bandwidth, however it is modulated on top of the carrier. *Williams* does not teach, in contrast to the present invention, that MAC 105 allocates an entire IC 401 to a specific subscriber and forbids such wavelength to be shared with any other subscriber, for example if a particular carrier frequency generated by IC 401 produces excess bandwidth. Williams teaches allocating a wavelength and a time slot, but in no way teaches that an optical transceiver 401 is "***exclusively assigned to a subscriber destination***" as is recited in independent Claim 59.

For the reasons given above, Applicants respectfully submit that *Williams* does not show or suggest the present invention as claimed in independent Claim 59. Applicants respectfully request reconsideration of the rejection of Claim 59 under 35 U.S.C. § 102(b). For the same reasons, Applicants also respectfully request reconsideration of rejection of Claims 60-62, which are dependent upon independent Claim 59.

Claim Rejections under 36 U.S.C. §103

In Section 8 of the present Office Action, claims 1-3, 5, 6, and 19 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara et al.* (U.S. Patent No. 4,533,948) in view of *Binns, et al.* (U.S. Patent No. 5,329,308) and *Darcie* (U.S. Patent No. 4,701,904). In Section 9 of the present Office Action, Claim 4 is rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns*, and *Darcie* as applied to Claim 1, and in further view of *Hooper et al.* (U.S. Patent No. 5,422,390). In Section 10 of the present Office Action, Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns*, and *Darcie* as applied to Claim 6, and in further view of *Bigham et al.* (U.S. Patent No. 5,544,161). In Section 11 of the present Office Action, Claim 8-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns* and *Darcie* as applied to Claim 1, and further in view of *Hoarty et al.* (U.S. Patent No. 5,526,034). In Section 12 of the present Office Action, Claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns* and *Darcie* as applied to Claim 1, and further in view of *Paik et al.* (U.S. Patent No.

5,136,411). In Section 13 of the present Office Action, Claims 15 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns* and *Darcie* as applied to Claim 1, and further in view of *Eng* (U.S. Patent No. 6,370,153). In Section 14 of the present Office Action, Claims 17 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns* and *Darcie* as applied to Claim 1, and in further view of *Williams*. In Section 15 of the present Office Action, Claim 20 is rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns* and *Darcie* as applied to Claim 1, and in further view of *Perlman* (U.S. Patent No. 5,420,862). In Section 16 of the present Office Action, Claim 21 is rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns*, *Darcie* and *Perlman* as applied to Claim 20, and further view of *Denker* (U.S. Patent No. 5,958,053). In Section 17 of the present Office Action, Claims 22, 23, 25, 32 and 33 are rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns*, *Paik* and *Gerszberg, et al.* (U.S. Patent No. 6,510,152). In Section 18 of the present Office Action, Claims 24 and 26 are rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns*, *Paik* and *Gerszberg* as applied to Claims 22 and 25, and in further view of *Williams*. In Section 19 of the present Office Action, Claims 27 and 28 are rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns*, *Paik* and *Gerszberg* as applied to Claim 22, and in further view of *Eng*. In Section 20 of the present Office Action, Claim 29 is rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns*, *Paik, Gerszberg* and *Eng* as applied to Claim 27, and in further view of *Perlman*. In Section 21 of the present Office Action, Claims 30-31 are rejected under 35 U.S.C. §103(a) as being unpatentable over *McNamara*, *Binns*, *Paik* and *Gerszberg* as applied to Claim 22, and in further view of *Wonfor, et al.* (U.S. Patent No. 6,381,747). In Section 22 of the present Office Action, Claim 63 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Hoarty* in view of *Gilbert, et al.* (U.S. Patent No. 6,016,311). In Section 23 of the present Office Action, Claims 64-70 and 74-78 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Hoarty* and *Gilbert* in view of *Williams*. In Section 24 of the present Office Action, Claim 62 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Williams* in view of *Gilbert*. In Section 25 of the present Office Action, Claims 71 and 72 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Hoarty, Gilbert* and *Williams* as applied to Claim 67, and further in view of *Wonfor*. In Section 26 of the present Office Action, Claim 73 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Hoarty, Gilbert, Williams* and

Wonfor as applied to Claim 71, and further in view of *McNamara* and *Perlman*. Those rejections are respectfully traversed and reconsideration of the claims is requested.

With respect to independent Claim 1 in the present application, it has been amended to incorporate the limitations of Claims 11, 12 and 13. In particular, Claim 1 now recites:

> *allocating a first portion of the remaining portion of the television broadcast spectrum to downstream subscriber channels; and*
>
> *allocating a second portion of the remaining portion of the television broadcast spectrum to upstream subscriber channels; and*
>
> *wherein each subscriber channel comprises a respective downstream subscriber channel and a respective upstream subscriber channel, each having a dedicated and unshared bandwidth*

On page 7 of the present Office Action, *Darcie* is mentioned as disclosing associating users with separate transceivers and wherein each transceiver is fixedly assigned a separate channel. The receivers 12 function to demodulate only those signals received in the channel associated with the transceiver (col. 3, lines 64-67), and transmitter 11 transmits on its assigned carrier frequency (col. 4, lines 43-58). However, as explained by *Darcie*, each of the transceivers 10_1-10_N is permanently assigned a separate one of the channels 1-N shown in Figure 2. Therefore, as seen in Figure 1, each transmitter 11 and receiver 12 is set to the corresponding frequency for the transceiver 10 (see col. 4, lines 24-28).

It can be seen that *Darcie* in no way allocates a <u>first portion</u> of the remaining portion of television broadcast spectrum to a downstream subscriber channel and allocates a <u>second portion</u> of the television broadcast spectrum to an upstream subscriber channel—*Darcie* allocates the same portion of spectrum to both upstream and downstream. Moreover, in no way does *Darcie* suggest that each of the upstream and downstream channels have their own dedicated and unshared bandwidth. In fact, *Darcie* teaches away from the present invention in that each <u>transmitter and receiver actually shares the same bandwidth</u> within its own channel to provide *communications* over links 13 and 16, and do not have their own bandwidth. Note that because optical fibers 13 and 16 are physically isolated, transmitters 11 and receivers 12 can communicate on the same frequency channels without collision. Therefore, while *Darcie* does

teach that each of the upstream and downstream channels are dedicated to a permanently assigned and separate channel, in now way is it suggested by *Darcie* that such upstream and downstream channels are unshared because they utilize the same frequency channel for both transmission and receiving. *Darcie* teaches allocating the same portion of frequency spectrum to both the upstream and downstream channels.

Consequently, Applicants respectfully submit that *Darcie* cannot show or suggest:

> *allocating a first portion of the remaining portion of the television broadcast spectrum to downstream subscriber channels; and*
>
> *allocating a second portion of the remaining portion of the television broadcast spectrum to upstream subscriber channels; and*
>
> *wherein each subscriber channel comprises a respective downstream subscriber channel and a respective upstream subscriber channel, each having a dedicated and unshared bandwidth*

On page 15 of the present Office Action, it is argued that Claims 12 and 13 are obvious in light of *McNamara*, *Binns* and *Darcie* and *Hoarty*. With regard to Claim 12, which has now been incorporated into independent Claim 1, it was argued that McNamara shows dividing the first portion of the television broadcast spectrum into downstream subscriber channels and a second portion into upstream subscriber channels as shown in Figure 1. It was further argued that McNamara teaches a subscriber channel comprising a respective downstream subscriber channel and a respective upstream subscriber channel, wherein each has a dedicated and unshared bandwidth as disclosed by a "home channel" at col. 5, lines 21-39. As explained in col. 5, lines 31-32, each subscriber terminal NAU is assigned a home channel.

It is argued on page 15 of the present Office Action that the above element of the present invention is suggested by *McNamara* at col. 5, lines 32-39. While *McNamara* clearly teaches that each subscriber terminal is assigned a "home channel," the entire teaching of *McNamara* is of a system for permitting two subscriber units to communicate over the same data channel ("naturally, for two subscriber units to communicate, they must both be on the same data channel." col. 5, lines 33-34.) As explained at col. 1, lines 57-65, *McNamara* describes a cable

TV communication system for providing message transmission between two subscriber nodes within the cable network. As described at col. 7, line 62-col. 8, line 24, a source node 44 changes its frequency to the frequency of the destination node 40 to permit communication exchange between the two nodes 40 and 44. Thus, *McNamara* teaches that source information is communicated over the same allocated channel (or bandwidth) between the transmitting and receiving subscriber nodes. The operation of *McNamara's* system requires tuning each subscriber unit to the same frequency, thereby permitting shared allocated spectrum space among the 80 FSK data channels. Furthermore, *McNamara* teaches that their system permits many users to share the same data channel. Channel sharing is achieved through CSMA/CD (col. 5, lines 40-54). Clearly, there would be no need for a contention mechanism such as CSMA/CD if every subscriber had unshared bandwidth within the system.

As can be seen, there is nothing suggesting separate and respective "downstream subscriber channel" and "upstream subscriber channel." Moreover, there is nothing "unshared" about the channel. Consequently, Applicants submit that *McNamara* cannot show or suggest a system where "***wherein each subscriber channel comprises a respective downstream subscriber channel and a respective upstream subscriber channel, each having a dedicated and unshared bandwidth,***" as is recited in independent Claim 1 in the present application. For the reasons give above, Applicants respectfully submit that *McNamara* in view of the prior art references cited in the present Office Action do not show or suggest Claims 1-21 and that the rejection of those claims should be reconsidered.

With regard to independent Claim 22 in the present application, therein is recited, *inter alia:*

> *forwarding, by the gateway device and as a function of an address embedded in the source information identifying a subscriber device from among a plurality of subscriber devices at the subscriber destination, demodulated source information to the addressed subscriber device at the subscriber destination.*

It is argued on pages 28-29 of the present Office Action that this element of the present invention is taught or suggested by *Gerszberg* in view of *McNamara, Binns* and *Paik.*

Specifically, it is argued that *Gerszberg* teaches a gateway forwarding received data as appropriate on a data network such as an Ethernet network, which requires a device address for proper routing, citing col. 7, lines 30-53. *Gerszberg* does describe coupling the peripheral devices to the intelligent services director 22 via a variety of communication interfaces (for example, see Figure 5), including an Ethernet interface 501 between telephone 130, computers 14 and control 510. At col. 5, lines 52-67, *Gerszberg* explains that the Ethernet link serves an Ethernet telephone 18-1 and the user's personal computer local area network including PC 14-1. *Gerszberg* also describes an Ethernet interface 119 interconnecting integrated residential gateway 22 with the peripheral devices including digital phone 121, video phone 130, audio interface 132 and set top box 131 (see Figure 2 and col. 7, lines 30-53). Still further, *Gerszberg* describes Ethernet connections 501 for connecting a plurality of devices such as a number of personal computers 14A, 14B, a television from a cable set top terminal and/or other devices (see Figure 5 and col. 14, lines 18-51). As is well known, the dominant hardware standard for local area networks today is Ethernet, which comes in dozens of variants. *Gerszberg* is merely teaching use of Ethernet as a local area network for accessing selected customer premise equipment 10 (see col. 14, lines 40-43). There is nothing within the teaching of *Gerszberg* that suggests the Ethernet frames originate with head end 63 and contain a specific destination address for a particular customer premise device 10. Instead, the above cited sections of *Gerszberg* describe the use of an Ethernet Local Area Network for interfacing a residential gateway 22 with the various customer premise equipment 10.

The above cited element of independent Claim 22 recites that the gateway device forwards the demodulated source information to an addressed subscriber device at the subscriber destination "as a function of an address embedded in the **source information** identifying a subscriber device from among a plurality of subscriber devices at the subscriber destination." As recited in the third element of Claim 22, "**source information**" is forwarded "**by the point of distribution**." Therefore, Claim 22 requires that the point of distribution embed "an address" in the source information "identifying a subscriber device from among a plurality of subscriber devices at the subscriber destination." *Gerszberg* does not show or suggest this element of the present invention. Instead, *Gerszberg* describes the head end 68 forwarding source information as a function of a destination address of intelligent services director 22 , which receives voice

and data over the DSL data lines and distributes the voice and data locally based on the content of the DSL frames. (see col. 9, lines 15-27; col. 10, lines 20-30; col. 11, lines 5-19; col. 14, lines 13-17; col. 15, lines 41-col. 16, lines 22; for example, "The ISD/IRG and the FMP/C-FMP include DSL/cable modems (e.g., XDSL/DOCSIS standard cable) modems to terminate the link layers associated with the DSL or coaxial segment of the connection. In a similar manner as the FMP/C-FMP, the processor in the ISD/IRG may be configured to reconstruct the IPv6 packets from DSL frames and then separates IP packets containing voice from those containing data and from those containing signaling." Col. 15, lines 45-53). There is nothing within *Gerszberg* to suggest that additional address information is encoded into the source information at the head end to permit the local intelligent services director 22 to actively *"forward[ing]"* source information to a particular subscriber device at the destination *"as a function of the address embedded in the source information identifying"* the subscriber device, as recited in Claim 22.

For these reasons, Applicants respectfully submit that *McNamara* in view of *Paik* and further in view of *Binns* and further in view of *Gerszberg* do not show or suggest independent Claim 22 in the present application and that the rejection of that claim should be reconsidered. For the same reasons, Applicants submit that *McNamara* in view of *Paik* and further in view of *Binns* and still further in view of *Gerszberg* also do not show or suggest Claims 24-33 and that the rejection of those claims should also be reconsidered.

In Section 22 of the present Office Action, Claim 63 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Hoarty* in view of *Gilbert, et al.* (U.S. Patent No. 6,016,311). Further, in Section 23 of the present Office Action, Claims 64-70 and 74-78 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Hoarty* and *Gilbert* in view of *Williams*. Those rejections are respectfully traversed and reconsideration of the claims is requested.

With reference to independent Claim 63 in the present application, it is argued on pages 38-40 of the present Office Action that this claim is suggested by *Hoarty* in view of *Gilbert*. Claim 63 recites, *inter alia:*

> *a multi-port switch that forwards source information for each subscriber destination to a corresponding port of the switch based on address information...*

each of the plurality of subscriber channels having a deterministic bandwidth and assigned to one or more of the subscriber destinations, each subscriber destination being assigned an unshared bandwidth allocation;

It is argued on page 38 in the present Office Action that a "multi-port switch" as recited in Claim 63 is shown by *Hoarty* in Figure 5 at switch 54. While post switchers 54 selectively transmit data from MCCs 53 to modulators 55, two-way control of the data flow is conducted by control item 59, and not post switchers 54. An individual MMC 53 is assigned on a demand basis to each requesting home interface controller. Post switchers 54 switch the MMC outputs to the appropriate modulators 55 (see col. 7, lines 25-35). Interactive information services is enabled by the net manager 66A, which maintains two-way data communication over gateway 66B with each of the converter type 69A-69B (col. 7, lines 60-65). As explained at col. 8, lines 23-26 and col. 20, lines 19-27, control 59 switches post switchers 54 to an appropriate modulator 55 as a function of the carrier frequency assigned to particular destination. In no way is *Hoarty* teaching or suggesting that a multi-port switch forwards source information to each of the subscriber destinations coupled to a corresponding post of the switch based on "address information contained in the source information."

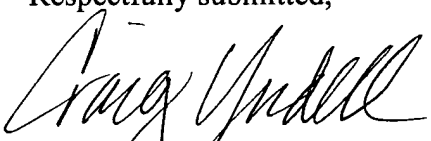
As explained in their abstract, *Hoarty* is teaching the assignment of a television information signal to a requesting home interface controller and that such signal assignment may involve the selection of a given carrier frequency or time slice. Signal control is provided through the assigned frequencies and time slices, and not providing a multi-port switch that forwards source information based on an address in the source information being forwarded. For this reason, Applicants respectfully submit that *Hoarty* in view of Gilbert does not show or suggest "**a multi-port switch that forwards source information for each subscriber destination to a corresponding port of the switch based on address information contained in the source information,**" as is recited in independent Claim 63.

Moreover, it is argued on page 39 in the present Office Action that this element is shown by *Hoarty* at col. 12, lines 5-14, lines 23-28 and at col. 8, lines 40-49. However, as recognized by the Examiner, these "virtual channels" merely identify a fixed frequency that is assigned to a

set-top box and that an MMC transmits source information to the set top box over the assigned frequency. *Hoarty* nowhere suggests that another set-top box isn't assigned to the same frequency, and consequently, shares the bandwidth allocated to that frequency. Multiple subscriber destinations can be tuned to the same frequency and receive data over a different virtual channel (e.g., using time division multiplexing on the frequency). Having an allocated virtual channel is not the same as having an allocated channel with a defined and unshared bandwidth. For this reason, Applicants submit that *Hoarty* in view of *Gilbert* does not show or suggest "*each subscriber destination being assigned an unshared bandwidth allocation*" as is recited in independent claim 63.

For these reasons, Applicants respectfully submit that *Hoarty* in view of *Gilbert* do not show or suggest independent Claim 63 in the present application and that the rejection of that claim should be reconsidered. For the same reasons, Applicants submit that *Hoarty* and *Gilbert* in view of *Williams* also do not show or suggest Claims 64-70 and 74-78 and that the rejection of those claims should also be reconsidered.

Respectfully submitted,



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